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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

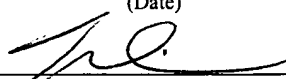
Applicant : Ahmad  
Appl. No. : 09/397,952  
Filed : September 17, 1999  
For : FABRICATION OF  
INTEGRATED DEVICES USING  
NITROGEN IMPLANTATION  
Examiner : Steven H. Rao  
Group Art Unit : 2814

CERTIFICATE OF MAILING

I hereby certify that this correspondence and all marked attachments are being deposited with the United States Postal Service as first-class mail in an envelope addressed to: Mail Stop Appeal Brief -- Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on

May 26, 2004

(Date)

  
Tina Chen, Reg. No. 44,606

**ON APPEAL TO THE BOARD OF PATENT APPEALS AND INTERFERENCES**  
**APPELLANT'S REPLY BRIEF**

Mail Stop Appeal Brief -- Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

This Reply Brief is filed in response to the Examiner's Answer in this appeal, mailed on March 26, 2004.

**I. Examiner Has Not Established *Prima Facie* Case of Obviousness**

The Examiner continues to reject Claims 1, 3-15 and 23-28 under 35 U.S.C. §103(a) as being unpatentable over Ahmad et al., U.S. Patent No. 5,405,791 and in view of Arai et al., U.S. Patent No. 5,972,783. Appellant respectfully submits that when a rejection for obviousness depends on a combination of elements disclosed in prior art references, there must be motivation to combine those particular elements in the prior art **as a whole**. The Examiner's asserted combination fails to provide a *prima facie* case of obviousness as the Examiner has not shown and teaching or suggestion in the cited references to combine the individual elements in the manner claimed in the present invention.

The pending claims recite a specific sequence of steps and the prior art does not teach or suggest this sequence. Appellant has specifically taught the advantages and differences in the

operation of a sequence in which nitrogen implantation is *followed by* a thermal oxidation step. This specific *sequence* of steps produces unexpected results over the methods described in the cited references. As the prior art does not teach the specific sequence, the Examiner's contention that the "'alleged unexpected and advantageous results' are neither new or unexpected because they are also disclosed" in the Ahmad et al. and Arai et al. references is rendered moot because neither Ahmad et al. nor Arai et al. teach or suggest the specific sequence of steps recited in the pending claims.

The Examiner also argues that Ahmad et al. teaches an ion implantation (dopants for the transistor active areas) prior to source/drain reoxidation, and that it would therefore be obvious to replace the ion implantation (dopants for the transistor active areas) of Ahmad et al. with the nitrogen implantation taught by Arai et al. See Examiner's Answer, at page 15. However, Appellant respectfully disagrees in that such a combination would result in a completely nonfunctional transistor because there would be no dopants to form active areas. Nitrogen could not serve the function of Ahmad et al.'s dopants.

**B. Arai et al. do not Teach Source/Drain Reoxidation**

Appellant further disagrees with the Examiner's characterization of Arai et al.'s annealing step as a "reoxidation." See Examiner's Answer, at page 14, third line from the bottom; page 19, line 4; page 25, lines 1-8, and 11-12; page 26, line 6.

The Examiner points to a "thermal spacer growth step" disclosed in the specification and contends that Arai et al.'s annealing step is a thermal growth step. However, the pending claims do not recite a "thermal spacer growth step," but rather a source/drain reoxidation or a source/drain oxidation. Appellant respectfully submits that it is irrelevant whether Arai et al.'s annealing step is similar to Appellant's in the sense that both are thermal steps. Appellant is not claiming a "thermal spacer growth step."

Appellant has recited "reoxidation" or "oxidation," and any interpretation of those terms to encompass Arai et al.'s anneal is both unreasonable and contrary to the skilled artisan's understanding. Certainly this commonality between Arai et al.'s anneal and Appellant's reoxidation/oxidation does not serve as a suggestion to combine.

Furthermore, the term "annealing" is defined as "the sustained heating of a material, such as metal or glass, at a known high temperature, followed by the gradual cooling of the material."

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Academic Press Dictionary of Science and Technology, Academic Press, Inc., Harcourt Brace Jovanovich, 1992. Appellant respectfully disagrees that one of skill in the art would interpret Arai et al.'s annealing step to be the same as a source/drain oxidation step recited in the pending claims.

**C. Examiner Must Show Reasonable Expectation of Success**

Appellant notes that the Examiner must show a reasonable expectation of success for the combination. The Examiner merely states that the two cited references are valid and therefore must be given "the full faith and credit for reasonable expectation of success." See Examiner's Answer at page 26. However, Appellant respectfully notes that the Examiner has ignored the fact that reasonable expectation of success applies to the *combination* and not the individual teachings of the references. On the previous page of the Examiner's Answer, the Examiner included a mischaracterization of Appellant's arguments as "impermissible piecemeal attacks on references that cannot show nonobviousness." On the contrary, Appellant submits that the Examiner is illogically engaged in "piecemeal" evaluation of individual references' expectation of success, rather than the success of his asserted combination. However, Appellant respectfully submits that the Examiner is combining one element from Ahmad et al. and another element from Arai et al., but provides no acceptable motivation for the *sequence* in which to combine these elements.

**II. Conclusions**

In view of the foregoing arguments, Appellant respectfully submits that the rejection of the pending claims over Ahmad et al. in view of Arai et al. are improper and should be withdrawn, and that the pending claims are allowable over the prior art of record.

**III. Request for Oral Hearing**

Pursuant to 37 C.F.R. §1.194, Appellant respectfully requests an Oral Hearing in this Appeal. This Request is also made in a separate paper filed herewith, and is accompanied by the fee set forth in 37 C.F.R. §1.17(d).

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**Filed** : September 17, 1999

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: May 26, 2004

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